REMARKS

Claims 1-8, 22, 23, 25, 61-63, and 65-75 are currently pending in this application. Claims 22, 23, 25 and 71-75 stand withdrawn. Claims 9-21, 24, 26-60 and 64 were previously canceled without prejudice or disclaimer. Applicant respectfully reserves the right to prosecute the subject matter of the canceled claims in one or more continuation or divisional applications.

Information Disclosure Statements

Applicant appreciates the Examiner's indication of consideration of the references properly cited by Applicant. Applicant notes that while the Examiner's initials are not presented on the returned copies of the PTO/SB/08A forms, the footnote on the copies returned to Applicant states that "all references considered except where lined through. /D.W./" Thus, Applicant construes this footnote to indicate that the cited references have been considered by the Examiner. Applicant respectfully requests clarification if Applicant's understanding is not correct.

Rejections

Rejections under 35 U.S.C. § 103

Claims 1-8, 61-63 and 65-70 were rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Panis *et al*, in view of Fretz *et al*, European Patent No. 0147236, Cino *et al* (U.S. Patent No. 5,527,702) and Goodrich Jr., *et al* (U.S. Patent No. 5,800,978).

Applicant respectfully disagrees and traverses this rejection.

Applicant respectfully notes that the Office Action acknowledges that Panis *et al* do not disclose incubation techniques in a medium containing cryoprotectant and stabilizer or the use of *Taxus brevifolia* plant cells. However, the Office Action asserts that Fretz *et al* teach incubation after thawing for regeneration of plant cells, and teach plating the thawed plant cells. Furthermore, the Office Action states that European Patent No. 0147236 teaches regeneration of plant cells in a medium containing a stabilizer, such as silver nitrate and other well known inhibitors, and carbon sources such as sugars, and that Cino *et al* teach a medium and culture

therefore, of *Taxus brevifolia* cells. The Office Action further states that Goodrich Jr., *et al*, teach washing the cells after thawing. According to the Office Action, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to provide a method for the recovery of cryopreserved plant cells as disclosed by Panis *et al*, using the washing technique of Goodrich, Jr. *et al* and techniques of Fretz *et al* on a regeneration medium containing a stabilizer as disclosed by the EP Patent and further to select for Taxus plant cells as disclosed by Cino *et al*. *See* Office Action, pages 4-5.

The cryopreservation recovery method of independent claim 1 for example, and each of the claims depending therefrom, requires at least each of the elements of obtaining cryopreserved plant cells, thawing the cryopreserved plant cells by heating the cells to a temperature above which the plant cells are not frozen to obtain thawed plant cells, serially washing the thawed plant cells in medium having successively reduced concentrations of at least one cryoprotective agent, said medium also containing a stabilizer, and removing the cryoprotective agent and recovering the thawed plant cells.

Applicant submits that there is no reason to modify the teachings of Goodrich, Jr. *et al* or Panis *et al*, or to combine the teachings of Goodrich, Jr. *et al* and Panis *et al* with the remaining cited references, in order to reach the claimed invention.

As noted previously during prosecution, Goodrich, Jr. *et al* appear to be directed to techniques and compositions for the cryopreservation of animal and human cells. Applicant submits that one of ordinary skill in the art might reasonably expect cryopreservation techniques specific to animal cells to perform differently when applied to plant cells, and therefore the person of ordinary skill would not rely on the teachings regarding the cryopreservation of animal cells (such as, for example, Goodrich, Jr. *et al*) for techniques adapted for use in the cryopreservation of plant cells.

This is further supported by the Declaration of Michael E. Horn, Ph.D., under 37 C.F.R. §1.132 of record, wherein it is stated that

> [w]hile cryopreservation of animal cultured cells is routine, cryopreservation of cultured plant cells has proven more difficult (*See*, the instant application, page 7, lines 24-26). Based on my experience, a person of ordinary skill in the art of plant cell culture would not view methods exemplified on human blood cells to be *per se* adaptable to plant cells with any reasonable expectation of success. Results from cryopreservation methods of animal cells are just not predicative of results obtained with plant cells.

See Horn Declaration, paragraph 10. As further stated in the Declaration, "it is unreasonable to suppose that any method that was designed for use using red blood cells, which do not have a cell wall, would be useful using plant cells or vice versa." *See* Horn Declaration, paragraph 11.

The Office Action also states with respect to the Panis *et al* reference that

> ... the argument that Panis *et al* teach an evaluation of the effects of different concentrations of cryoprotectants in the freezing process and not the washing step, it should be noted that the step of washing cells with cryoprotectant is well known and one of skill would have been motivated to modify Panis *et al* and thus, to apply the effects of differing concentration of cryoprotectants on the step of washing ... one of skill would have expected DMSO to provide successful results for its application during washing thawed cells since the cells would be in a post-thaw state and DMSO have proven to be useful. Further, the teaching that washing can impair cells and that removal of the cryoprotectant resulted in loss of regrowth only promotes the premise that the cryoprotectant would be expected to provide successful results in washing solutions, and to reduce its concentrations but not remove it completely would optimize growth of recovered cells.

See Office Action, pages 7-8.

Applicant respectfully disagrees and traverses.

Applicant submits that any washing steps of Panis *et al* are a one-step wash with a change to cryoprotectant free medium, and are not the washing of thawed plant cells in media having *successively reduced* concentrations of at least one cryoprotective agent, as is required by the claimed subject matter. The results obtained by Panis *et al* regarding the washing of thawed cells teach away from the combination of this reference with the other cited references to reach the claimed invention, since Panis *et al* state that "removal of the cryoprotectant solution and its replacement by cryoprotectant-free liquid medium resulted in the complete loss of regrowth capacity, the cells becoming white."

It is noteworthy that Panis *et al* fail to include the washing of thawed plant cells as an element of their protocols in the "Discussion" portion of the paper. For example, Panis *et al* state that "... thawing is carried out rapidly to prevent damaging recrystallization by any remaining intracellular ice. The cells are then transferred without washing to a semi-solid medium containing BA." *See* Panis *et al*, page 347, lines 20-23 ("Discussion" section). Furthermore, Applicant submits that Panis *et al* are silent to any teaching or contemplation of the washing of thawed plant cells in media having *successively reduced* concentrations of at least

one cryoprotective agent. Applicant submits that this is because a fair reading of Panis *et al* teaches away from the washing of thawed cells based on the negative results achieved by Panis *et al* from their limited washing efforts.

It is also noted by Applicant that the Office Action states that the steps of washing cells with cryoprotectant is well known. However, it is noteworthy that none of the cited references contemplates the washing of thawed plant cells in media having *successively reduced* concentrations of at least one cryoprotective agent. Applicant respectfully reiterates the statement from Dr. Horn's Declaration that "... a person of ordinary skill in the art of plant cell culture would not view methods exemplified on human blood cells to be *per se* adaptable to plant cells with any reasonable expectation of success."

Accordingly, Applicant submits that the claims are not obvious over Panis *et al*, in view of Fretz *et al*, European Patent No. 0147236, Cino *et al* (U.S. Patent No. 5,527,702) and newly cited Goodrich Jr., *et al* (U.S. Patent No. 5,800,978). Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1-8, 61-63 and 65-70 under 35 U.S.C. § 103(a).

CONCLUSION

An indication of allowance of all claims is respectfully solicited. Early notification of a favorable consideration is respectfully requested.

Respectfully submitted,

HUNTON & WILLIAMS LLP

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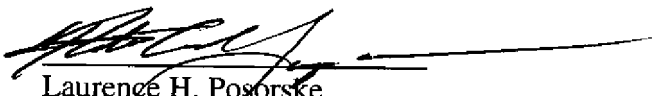
By: 

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